PC Control: The Smart Way to a Complete Solution

Why should I use PC control?

PLCs provide a great solution for many applications, but when your application goes beyond straight-forward ladder logic controlling simple I/O, PC control can be the smarter way to go.

When you have a PLC system that includes an HMI with motion control and/or a vision system, you not only spend time developing and debugging each system independently, you also have to spend significant effort integrating the separate controllers. The result is often difficult to support. Even small changes require editing multiple databases and complex debugging. Add coprocessor modules for communications, complex math algorithms or string/array data manipulation and you start to wonder why there isn't an easier way.

Well, there is, and it's called Think & Do PC Control. Think & Do, America's leading PC control software, brings you all the tools you need to easily handle complex applications.

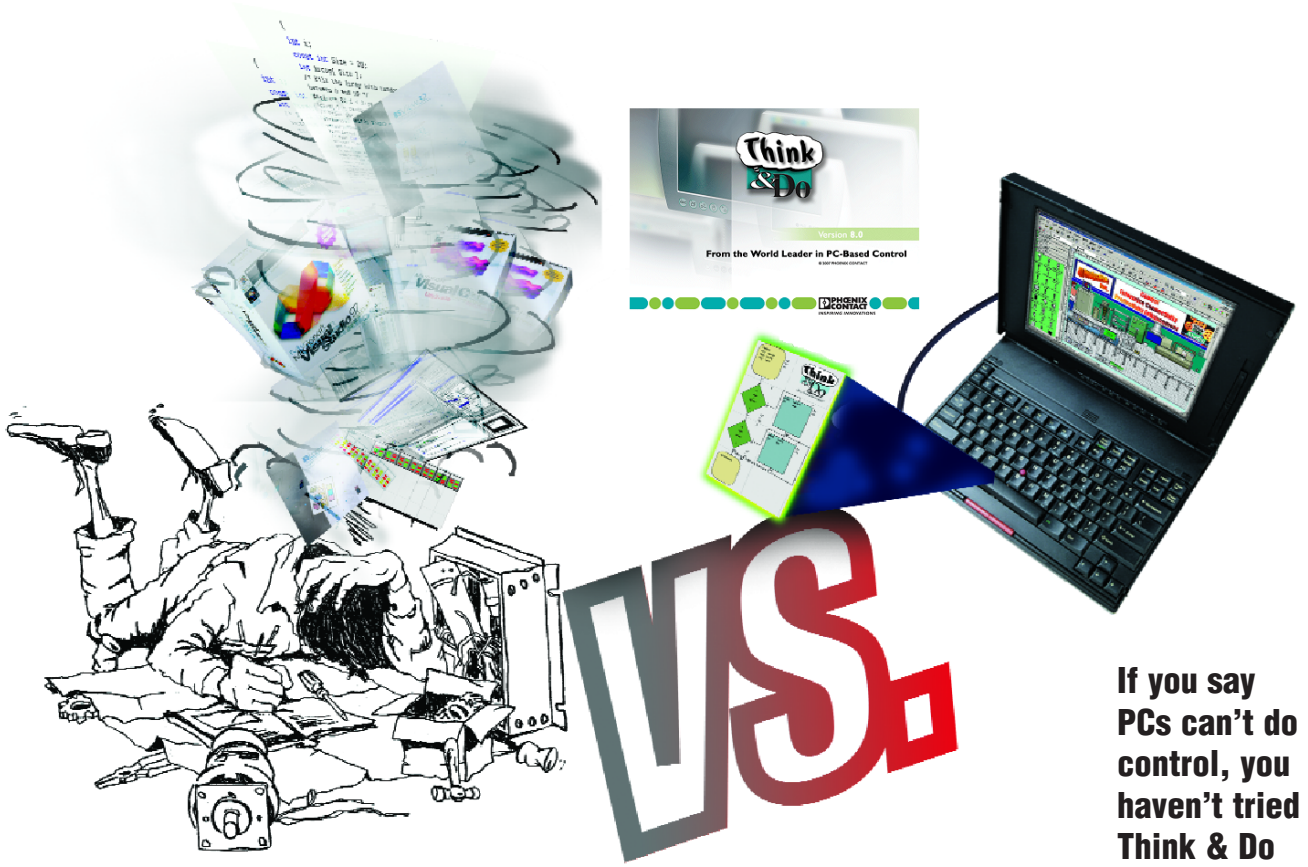
If your application requires:

- HMI as well as control
- Advanced data manipulation (even string arrays) and advanced math functions
- Data exchange with business applications (from spreadsheets to ERP systems)
- One or more third-party PC cards, such as those for motion control or vision systems
- Communication with serial or networked field devices
- Storage or access to large amounts of data
- Large number of PID loops (up to 64)
- Open architecture for C/C++ or VisualBasic

It requires Think & Do PC Control!

Why is Think & Do PC control so much easier?

With Think & Do, your HMI and control share the same database, so there is no duplication. Intuitive flowcharting makes coding the control logic as easy as sketching out the control algorithm. The powerful graphics tools and readily-accessible data tags enable you to create a quality HMI so fast you'll have to experience it to truly believe it. Think & Do includes the math functions and data types found in high-level programming languages, so complex algorithms and data management are a snap. PC architecture allows Think & Do to seamlessly support a variety of specialty motion, vision systems, and field network interface PC cards. The PC and Windows allow Think & Do to provide simple communication links on serial or Ethernet networks. Think & Do simplifies connecting everything from SQL databases to barcode readers with your control application.



If you say PCs can't do control, you haven't tried Think & Do PC control.

PC Control Solutions Using Think & Do

Think & Do 8.0

PC-TD8-USB
Keyless Development and USB Runtime key; non-keyed environment provides free WinPLC programming.

PC-TD8-WEB4-USB
Full development package plus four concurrent runtime sessions with USB key; Web viewing capability

ESS-BASIC
Extended service and support;
Basic 1 year

ESS-PREMIUM
Extended service and support;
Premium 1 year

Includes:

- Flowchart logic
- Superior HMI features
- Easy SQL interface
- Web view capable (requires web view version)
- Importing screens
- Integrated serial communication
- Modbus TCP, Modbus RTU and Modbus Plus support
- Integrated motion control
- Integrated vision control
- PID process control (64 loops)
- Powerful debugging tools
- Offline logic testing
- Common database for HMI, logic and motion

Choose Think & Do 8.0 when you need

1. to communicate to an SQL database
2. a superior HMI with animation and advanced graphics

Think & Do 8.0 Overview

Think & Do™ Version 8.0 (PC-TD8-USB) is an integrated control environment that lets you do more with a given PC platform. It supports development, deployment and operation of high-value automated control systems for material handling and manufacturing. Think & Do 8.0 provides an intuitive, open-architecture environment that readily integrates with hardware and software components from virtually all major suppliers.

Projects created with Think & Do 8.0 integrate seamlessly with enterprise information systems to provide valuable data about system operation. Major components of Think & Do 8.0 are:

- ProjectCenter: Provides ready access to all project elements and the fully integrated tagname database using the Data Item Explorer.
- FlowView: For creating control logic.
- ScreenView: For creating HMI screens.
- I/O View: For configuring project I/O.
- AppTracker: For fast, graphical debugging.
- Runtime Engine: Provides a robust, deterministic project execution environment.

Think & Do 8.0 makes it easy to target your project to the Microsoft Windows platform that best suits your needs Whether you create a project for a Certified PC or CE, scaling for a different platform requires only minor adjustment. There are four USB key versions available, so selecting the product that best meets your needs is easy. There are two USB key development packages, one with and one without Web viewing capabilities.

Extended Software Service and Support (ESS) Products

We offer two extended support products, a basic package and a premium package. The basic ESS package, **ESS-BASIC** is a one-year subscription and includes:

- 8 AM to 5 PM EST telephone support directly from Phoenix Contact
- E-mail support
- USB-Parallel key swaps
- Defective or damaged key replacements
- Software maintenance updates

The premium ESS package, **ESS-PREMIUM** is also a one-year subscription. It contains everything in the basic package, plus:

- Webex training seminars
- A 50% discount on training seats
- Major software platform updates
- Upgrade from Think & Do Live! version 5.x to Think & Do 8.0 plus hardware key
- Or an upgrade from Think & Do Studio version 7.x via a hardware key field upgrade or replacement.

Note: ESS products cannot be purchased online. The order must be phoned in (800-633-0405) and a valid software serial number is required.

Conversion from Think & Do Studio and Live!

Studio: Flowcharts developed in Studio can be converted to Think & Do 8.0, but HMI screens cannot be converted.

Live!: Flowcharts and HMI screens developed in Live! cannot be converted to Think & Do 8.0.

Think & Do 8.0
PC-TD8-USB
Includes keyless development and USB runtime key. Use to develop or modify a Think & Do v8 project on a PC. Non-keyed environment provides free WinPLC programming.

PC-TD8-WEB4-USB
Full development package plus four concurrent runtime sessions with USB key; Web viewing capability

Demo Mode

To see if Think & Do 8.0 is right for you, you can install and use it for up to 40 hours within a 30-day time period at no cost.

System requirements

Development System or Windows Runtime Target

Windows 2000 , XP (32-bit), Vista (32-bit) or Windows 7 (32-bit),
Pentium IV compatible processor
256 MB RAM (512 MB or higher recommended),
750 MB available hard disk space,
CD-ROM drive,
64 MB or higher video adapter,
Color monitor (min resolution 800x600),
Ethernet adapter

Training

Phoenix Contact offers training courses led by certified Phoenix Contact Solution Providers at their headquarters in Ann Arbor, MI.

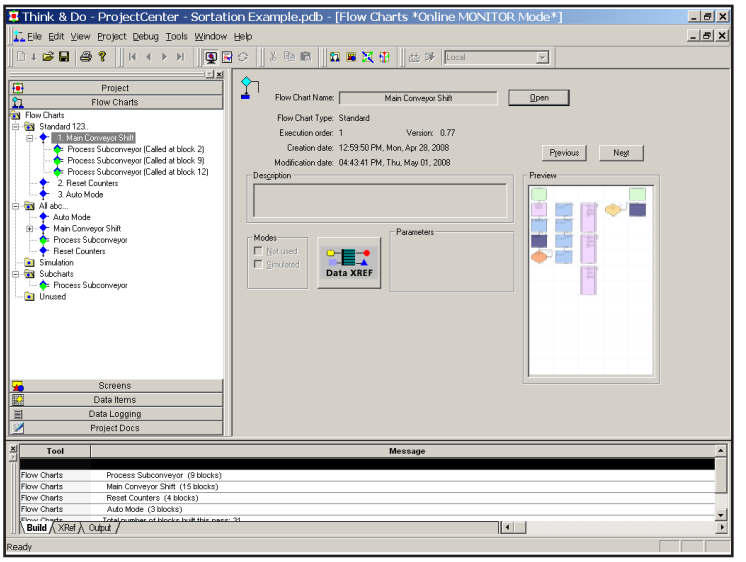
Check **www.phoenixcon.com/software** for training dates. Training is half price for subscribers to Premium **E**xtended **S**ervice and **S**upport, ESS-PREMIUM.

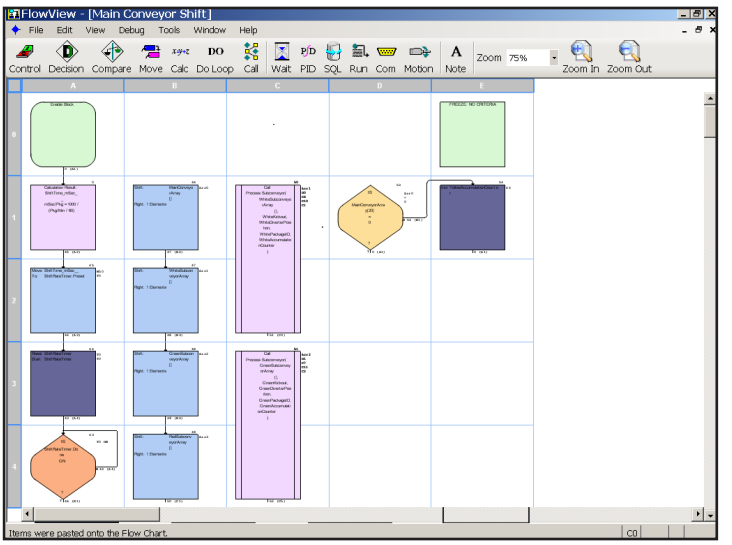
Think & Do 8.0 Overview

Features

ProjectCenter for creating your project

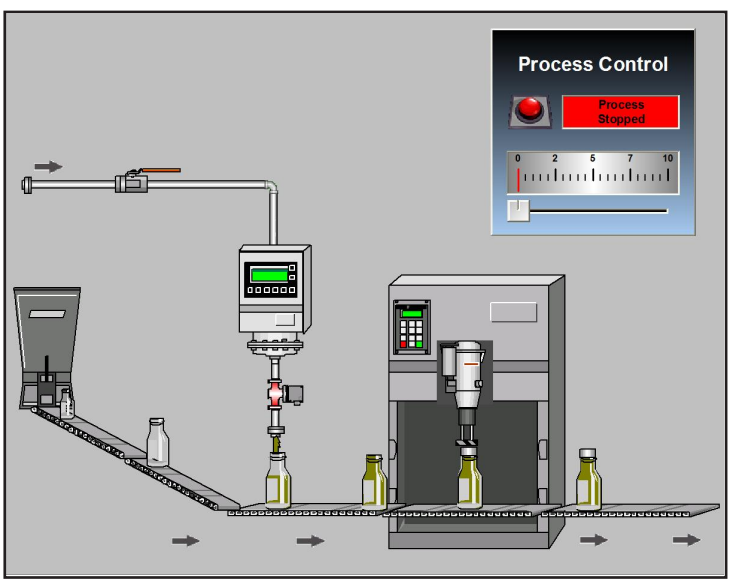
ProjectCenter is the starting point for developing your project and provides access to all Think & Do development tools, such as menus, project information and runtime settings. It provides ready access to all project elements and the fully integrated tagname database.





ScreenView for creating and editing HMI screens

The most dramatic improvement in this revision of Think & Do is the HMI screen tool. ScreenView appears in an independent window that provides a complete HMI screen development environment. The graphical capabilities and functionality in v8.0 far surpass any previous screen tools we have employed for this PC-based control environment.

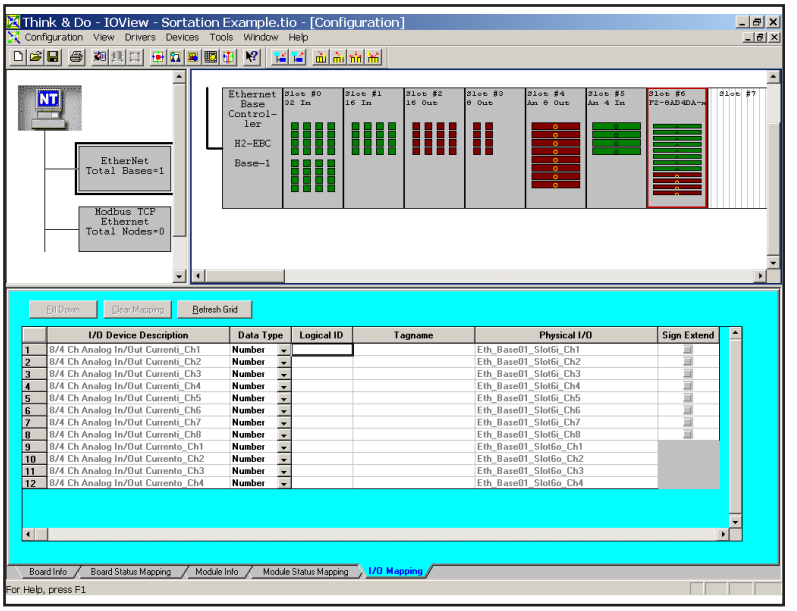


Think & Do 8.0 Overview

I/OView for configuring your project I/O

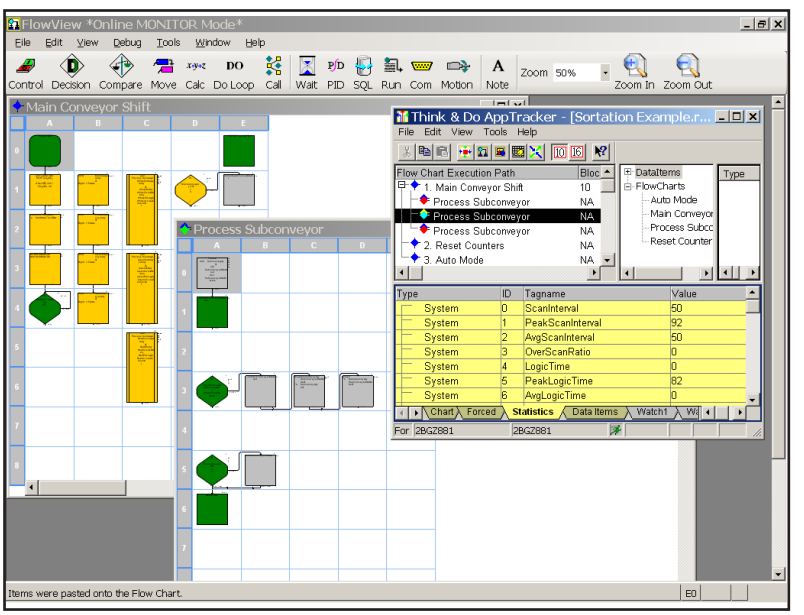
Use IOView to easily:

- Specify inputs, outputs, and data items
- Configure I/O
- Add I/O drivers and devices
- Map I/O
- Scan and monitor I/O
- Use a watchdog timer



AppTracker provides a fast, graphical debugging tool

AppTracker is a stand-alone application. It can run even if the development tools in ProjectCenter are not running and can help identify problems easily during development.



PC Control with Field I/O

Think & Do, with your choice of I/O, is a powerful, flexible solution for all your automation needs.The example below uses Ethernet, but Think & Do PC Control supports DeviceNet, Profibus, and other popular fieldbus networks as well.

Business System

Uplink to Office LAN

Terminator I/O distributes small groups of I/O at control points throughout the process

Ethernet Base Controller's [TIH-EBC(100)] on-board serial port provides a link to label printer/applicator or another serial device.

Dedicated I/O LAN

Main factory floor PC coordinates production, manages product database, and controls material handling systems

Control PCs using separate Ethernet ports to isolate the control networks from the business LAN(s)

Fail-safe mode choices:

1) All I/O off
2) Timer-based I/O hold
3) Preset pattern

(For all distributed I/O mastered from a PC.)

DL205 I/O on Ethernet supports a wide range of I/O, including the H2-CTRIO(2) counter module

Ethernet link to production databases

Think & Do controls automated grinding machine. Local HMI with touchscreen replaces pushbuttons

Third-party PC motion card controlling three-axis servo system for grinding heads.

Data tags from other PCs are shared over LAN for HMI and control

Industrial modem connection supplies machine support data to OEM

Third-party PC card interface to Ethernet vision inspection system

SE-SW8U Stride industrial Ethernet switch

GPIB/IEEE488 to legacy Laser Surface Analyzer

Think & Do controls application of specialty surfaces in oven using complex flow calculations. Also performs visual inspection of finished product

All industrial hardware shown is available in this catalog

I/O Selection Guide for PC Control

Our PC-based control architecture allows you to choose I/O from our most complete and flexible I/O families. AutomationDirect I/O also supports the most popular control networks, such as Ethernet, Profibus and DeviceNet. Check out this chart to see most of the available options. Refer to I/O specifications in the PLC or Field I/O section for a complete list.

DL205 Discrete Input Modules		
D2-08ND3	8-pt 12-24VDC sink/source	
D2-16ND3-2	16-pt 24VDC sink/source	
D2-32ND3	32-pt 24VDC	
D2-32ND3-2	32-pt 5-15VDC	
D2-08NA-1	8-pt 110VAC	
D2-08NA-2	8-pt 170-265VAC, 2 commons	
D2-16NA	16-pt 110VAC	
DL205 Discrete Output Modules		
D2-04TD1	4-pt 12-24VDC sink	
D2-08TD1	8-pt 12-24VDC sink	
D2-08TD2	8-pt 12-24VDC source	
D2-16TD1-2	16-pt 12-24VDC sink, 0.1A/pt 1.6A/mod	
D2-16TD2-2	16-pt 12-24VDC source, 0.1A/pt 1.6A/mod	
D2-32TD1	32-pt 24VDC sinking	
D2-32TD2	32-pt 24VDC sourcing	
D2-08TA	8-pt 18-220VAC	
D2-12TA	12-pt 18-110VAC	
D2-04TRS	4-pt isolated relay 5-30VDC or 5-250VAC	
D2-08TR	8-pt relay, 5-30VDC or 5-240VAC	
F2-08TR	8-pt relay, 10A/com, 5-30VDC or 5-240VAC	
F2-08TRS	8-pt relay 12-28VDC, or 12-250VAC	
D2-12TR	12-pt relay, 5-30VDC or 5-250VAC	
DL205 Combination Discrete Modules		
D2-08CDR	Combo 4-pt 24VDC in and, 4-pt relay out	
DL205 Analog Modules		
F2-04AD-1	4-ch input, 4-20mA 12 bit res	
F2-04AD-2	4-ch input, voltage 12 bit res	
F2-08AD-1	8-ch input 4-20mA, 12-bit res	
F2-08AD-2	8-ch input voltage, 12-bit res	
F2-02DA-1	2-ch output 4-20mA, 12-bit res	
F2-02DA-2	2-ch output voltage, 12-bit res	
F2-02DA-1L	2-ch 4.20 mA out 12-bit, ext 12VDC pwr	retired
F2-02DA-2L	2-ch voltage out 12-bit, ext 12VDC pwr	retired
F2-02DAS-1	Isolated, 2-ch 4-20mA 16-bit out	
F2-02DAS-2	Isolated, 2-ch voltage 16-bit out	
F2-08DA-1	8-ch, 4-20mA, 12-bit out	
F2-08DA-2	8-ch, 0-5VDC or 0-10V, DC, 12-bit out	
F2-4AD2DA	4-ch in /2-ch out., 4-20mA 12-bit res.	
F2-8AD4DA-1	8-ch in/4-ch out, current, 16-bit	
F2-8AD4DA-2	8-ch in/4-ch out, voltage, 16-bit	
F2-04RTD	4-channel RTD, 0.1 DEG C res	
F2-04THM	4 ch thermocouple or, 16-bit volt. input	
DL205 Specialty Modules		
H2-CTRIO2	DL205 high speed counter with pulse out	
F2-08SIM	8-pt input simulator	
H2-SERIO(-4)	3-port serial for Win PLC	

DL405 Discrete Input Modules		
D4-08ND3S	8-pt 12-24VDC source	retired
D4-16ND2	16-pt 12-24VDC source	
D4-16ND2F	16-pt 12-24VDC input, fast response	
D4-32ND3-1	32-pt 24VDC sink/source	
D4-32ND3-2	32-pt 5-12VDC sink/source	retired
D4-64ND2	64-pt 20-28VDC source	
D4-08NA	8-pt 110-220VAC	
D4-16NA	16-pt 110VAC	
D4-16NA-1	16-pt 220VAC	retired
D4-16NE3	16-pt 12-24VAC/VDC sink/source	
F4-08NE3S	8-pt 90-150VAC/DC sink/source isolated	retired
DL405 Discrete Output Modules		
D4-08TD1	8-pt 12-24VDC sink	retired
F4-08TD1S	8-pt 24-150VDC sink/source isolated out	retired
D4-16TD1	16-pt 5-24VDC sink	
D4-16TD2	16-pt 12-24VDC source	
D4-32TD1	32-pt 5-24VDC, sink	
D4-32TD1-1	32-pt 5-15VDC, sink	retired
D4-32TD2	32-pt 12-24VDC, source	
D4-64TD1	64-pt 5-24VDC sink	
D4-08TA	8-pt 18-220VAC	
D4-16TA	16-pt 18-220VAC	
D4-08TR	8-pt relay 5-30VDC or, 5-250VAC	
F4-08TRS-1	8-pt relay 12-30VDC or, 12-250VAC	
F4-08TRS-2	8-pt relay 12-30VDC or, 12-250VAC	
D4-16TR	16-pt relay 5-30VDC or, 5-250VAC	
Network Bus Interfaces and I/O Bases		
DL205 and DL405 bases, Terminator I/O power supplies and terminal bases, Bus adapter modules for PC control: DL205 (Ethernet, Profibus, DeviceNet, SDS); DL405 (Ethernet); Terminator I/O (Ethernet, Profibus, DeviceNet)		
DL405 Analog Modules		
F4-04AD	4-ch analog input voltage/current	
F4-04ADS	4-ch isolated analog voltage/current	
F4-08AD	8-ch analog input, voltage/current	
F4-16AD-1	16-ch analog input, current, 12-bit	
F4-16AD-2	16-ch analog input, voltage, 12-bit	
F4-04DA-1	4-ch analog output, current, 12-bit	
F4-04DA-2	4-ch analog output, voltage, 12-bit	
F4-04DAS-1	4-ch isolated, 16-bit analog out, 4-20mA	
F4-04DAS-2	4-ch isolated 16-bit analog output, voltage	retired
F4-08DA-1	8-ch analog output, current	
F4-08DA-2	8-ch 0-5VDC or 0-10VDC, 12-bit analog out	
F4-16DA-1	16-ch analog output, current	
F4-16DA-2	16-ch 0-5VDC or 0-10V DC 12-bit analog out	

DL405 Temperature Modules		
F4-08RTD	8-ch RTD	
F4-08THM	8-ch thermo F/type, (J,E,K,R,S,T,B,N,C)	
DL405 Specialty Modules		
D4-HSC	DL405 high speed counter	retired
D4-16SIM	8/16 pt input simulator	retired
Terminator I/O Discrete Input Modules		
T1K-08ND3	8-pt 12-24VDC sink/source	
T1K-16ND3	16-pt 12-24VDC sink/source	
T1K-08NA-1	8-pt 110VAC	
T1K-16NA-1	16-pt 110VAC	
Terminator I/O Discrete Output Modules		
T1K-08TD1	8-pt 12-24VDC sink	
T1K-08TD2-1	8-pt 12-24VDC source	
T1H-08TDS	8-pt 12-24VDS isoated sink/source	
T1K-16TD1	16-pt 12-24VDC sink	
T1K-16TD2-1	16-pt 12-24VDC source	
T1K-08TA	8-pt 110-240VAC	
T1K-08TAS	8-pt 110-240VAC isolated commons	
T1K-16TA	16-pt 110-240VAC	
T1K-08TR	8-pt relay 5-30VDC or 5-240VAC	
T1K-16TR	16-pt relay 5-30VDC or 5-240VAC	
T1K-08TRS	8-pt isolated relay 5-30VDC or 5-240VAC	
Terminator I/O Analog Modules		
T1F-08AD-1	8-ch analog input 4-20mA 14-bit res	
T1F-08AD-2	8-ch analog input voltage 14-bit res	
T1F-08DA-1	8-ch analog output 4-20mA 12-bit res	
T1F-08DA-2	8-ch analog output voltage 12-bit res	
T1F-16AD-1	16-ch analog input 4-20mA 14-bit res	
T1F-16AD-2	16-ch analog input voltage 14-bit res	
T1F-16DA-1	16-ch analog output 4-20mA 12-bit res	
T1F-16DA-2	16-ch analog output voltage 12-bit res	
T1F-14THM	14-ch thermocouple 16-bit res	
T1F-8AD4DA-1	I/O 8-ch analog input 4-ch analog output, current	
T1F-8AD4DA-2	I/O 8-ch analog input 4-ch analog output, voltage	
Terminator I/O Specialty Modules		
T1H-CTRIO	High-speed counter with pulse out	